

**In The United States Patent and Trademark Office**

In re Application of: Jaffee

Art Unit: 1794

**Serial No. 10/718,007**

Case Docket No. 7237

Filed: November 20, 2003

Examiner: Matzek, Matthew D.  
February 3, 2010

**For: Tough, Flexible Mats**

Commissioner of the Patents & Trademarks  
Alexandria, VA 22313-1450

Dear Sir:

This appeal is from the Final Office Action mailed on August 13, 2009 and an Advisory Action mailed November 9, 2009, rejecting claims 51-64, 71-84, 91-94 and 99, set forth in the Claims Appendix of this brief.

**APPEAL BRIEF**

**I. Real Party In Interest:**

The real party in interest is Johns Manville, assignee of the inventor, Jaffee.

**II. Related Appeals and Interferences**

**NONE**

**III. Status of the Claims**

Claims 1-50, 65-70, 85-90 and 95-98 having been cancelled earlier, the final rejection of claims 51-64, 71-84, 91-94 and 99 under 35 USC 103(a) is hereby appealed.

**IV. Status of Amendments**

After the Final Office Action mailed August 13, 2009, a Rule 1.116

Request For Reconsideration was filed on October 15, 2009. This Rule 1.116 Request For Reconsideration was considered, but the Final Rejection under 35 USC 103 of the appealed claims was maintained.

**V. Summary of the Claimed Subject Matter:**

The invention of independent **claim 51** is a fibrous nonwoven mat having:

a basis weight of 2.3 to about 2.6 lbs./sq. ft. (please see page 8, lines 9-10, Example 3, page 10, line 27 and Example 2, page 10, line 4, of the specification),

a thickness in the range of about 38 to about 48 mils, please see Example 2, page 10, line 6,

a Taber stiffness of at least about 50 gram centimeters, please see page 3, line 17,

a high flame resistance passing the National Fire Protection Association's NFPA Method #701 Flammability Test, please page 3, lines 14-16, and

unexpected tensile strength, flex and recovery properties after scoring and folding, and being suitable for use as a scored and folded fibrous nonwoven mat for vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile because of the fibrous nonwoven mat having the ability, after being scored, folded, and compressed, to spring back to the original shape and orientation, please see page 3, lines 1-5 of the specification, excellent tensile strength, flex and recovery properties, see page 3, lines 6-11,

that make the mats suitable, for vertical webs spanning between an exposed mat and a backer sheet in a compressible ceiling tile, see page 3, lines 1-5 and paragraph 0122 and the last half of paragraph 0127 in the U. S. Pub. App. No. 2002002142 (No. 1 of Evidence Appendix),

and comprising a blend of fibers comprising about 88 to about 92 wt. percent chopped glass fibers having a diameter in the range of about 13 to about 17.5 microns and a length in the range of about 0.7 to about 1.1 inches,

see page 2, lines 17-18, page 3, lines 30-32, Example 2, page 9, lines 32-33 and Example 3, page 10, lines 19-20, page 5, lines 12-13 original claim 91, and page 5, line 14, and about 8 to about 12 wt. percent man made polymer fibers selected from the group consisting of polyester, polypropylene, nylon, PBT, polyacrylonitrile, and polybenzimidazole, see page 4, lines 22-24, Example 3, page 10, lines 20-21 and Example 2, page 9, lines 33-34, selected from the group consisting of polyester, polypropylene, nylon, PBT, polyacrylonitrile, and polybenzimidazole, see page 4, lines 26-27,

the blend of fibers bound together by a binder that is at least partially cured and consists essentially of, before drying and curing, a homopolymer or a copolymer of polyacrylic acid and a polyol, with or without a polycarboxy polymer, the binder being present in the mat in an amount of about 25 +/- 5 wt. percent of the fibrous nonwoven mat, please see page 2, lines 35-36, the top of page 3 and lines 21-25 and page 6, lines 31-33.

The invention of independent **claim 91** is fibrous nonwoven mat having compositions comprising, (**highlighted** portions different from claim 51 above) a basis weight in the range of 2.3 to about 2.6 lbs./sq. ft. (please see page 8, lines 9-10, Example 3, page 10, line 27 and Example 2, page 10, line 4, of the specification),

a thickness in the range of about 38 to about 48 mils, please see Example 2, page 10, line 6,

a Taber stiffness of at least about 50 gram centimeters, please see page 3, line 17,

a high flame resistance passing the National Fire Protection Association's NFPA Method #701 Flammability Test, please page 3, lines 14-16, and

unexpected tensile strength, flex and recovery properties after scoring and folding, and being suitable for use as a scored and folded fibrous nonwoven mat for vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile because of the fibrous nonwoven mat having the ability, after being scored and folded, and compressed, to spring back to the original shape and orientation, please see page 3, lines 1-5, excellent tensile strength, flex and recovery properties, see page 3, lines 6-11, that make the mats uniquely suitable, for connecting webs joining and spanning between an exposed facer sheet and a different backer sheet in unique compressible ceiling tiles **disclosed in U.S. Published Patent Application No. 20020020142** (see page 3, lines

1-5 Evidence Appendix). Such tile can be collapsed and compressed to a thin, flat condition, folding the strips of claimed mats, to reduce storage and shipping costs, the strips of mats springing back, please see page 3, lines 1-5,

and comprising a blend of fibers comprising

about **84** to about 92 wt. percent chopped glass fibers having a diameter in the range of about 13 to about 17.5 microns and a length in the range of about 0.7 to about 1.1 inches, see page 2, lines 17-18, page 3, lines 30-32, Example 2, page 9, lines 32-33 and Example 3, page 10, lines 19-20, page 5, lines 12-13 original claim 91, and page 5, line 14, and about 8 to about **16** wt. percent of **polyester fibers having a length of about 0.25 +/- 0.07 inch**, please see original claim 62,

the blend of fibers bound together **with about 20 to about 30 wt. percent, based on the dry weight of the fibrous nonwoven mat, of a cured resin consisting essentially of a resin derived from an aqueous** homopolymer or a copolymer of polyacrylic acid and a polyol, with or without a polycarboxy polymer, the binder being present in the mat in an amount of about 25 +/- 5 wt. percent of the fibrous nonwoven mat, please see page 2, lines 35-36, the top of page 3 and lines 21-25 and page 6, lines 31-33.

The invention of independent **claim 99** is a fibrous nonwoven mat having, **(highlighted** portions different from claim 51 above)

a high flame resistance passing the National Fire Protection Association's NFPA Method #701 Flammability Test, please page 3, lines 14-16, and

unexpected tensile strength, flex and recovery properties after scoring and folding, and being suitable for use as a scored and folded fibrous nonwoven mat for vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile because of the fibrous nonwoven mat having the ability, after being scored and folded, and compressed, to spring back to the original shape and orientation, please see page 3, lines 1-5, excellent tensile strength, flex and recovery properties, see page 3, lines 6-11, that make the mats uniquely suitable, for connecting webs joining and spanning between an exposed facer sheet and a different backer sheet in unique compressible ceiling tiles disclosed in U.S. Published Patent Application No. 20020020142 (see page 3, lines 1-5 Evidence Appendix). Such tile can be collapsed and compressed to a thin, flat condition,

folding the strips of claimed mats, to reduce storage and shipping costs, the strips of mats springing back, please see page 3, lines 1-5,

a Taber stiffness of at least about 50 gram centimeters, please see page 3, line 17,

**an air permeability in the range of about 500 - 700 CFM/sq. ft.**, please see page 3, lines 18-19,

a basis weight in the range of 2.3 to about 2.6 lbs./sq. ft. (please see page 8, lines 9-10, Example 3, page 10, line 27 and Example 2, page 10, line 4, of the specification),

a thickness in the range of about **35** to about 48 mils, please see Example 2, page 10, line 6,

the fibrous nonwoven mat comprised of

a blend of fibers comprised of about 88 to about 92 wt. percent of chopped glass fibers, see page 2, lines 30-32, having an average fiber diameter in the range of about **16 +/- 1** microns, see original claim 60, and a length of about **1 inch**, see Example 1 on page 9, and

about 8 to about 12 wt. percent of **1.5 denier polyester fibers having a length of about 0.25 +/-0.07 inch**, see page 4, lines 22-24, Example 3, page 10, lines 20-21, original claim 62 and Example 2, page 9, lines 33-34,

the blend of fibers being bound together with about **25 to about 28 wt. percent**, based on the dry weight of the fibrous nonwoven mat, see paragraph spanning page 5, lines 16-24, of a cured resin derived from an aqueous homopolymer or copolymer consisting essentially of polyacrylic acid and a polyol, with or without a polycarboxy polymer **the average molecular weight of the polyacrylic acid polymer is about 3,000 or less**, see page 2 of the spec., lines 35-36 and page 6, lines 31-33, **wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent**, see page 3, lines 7-14,

**VI. Grounds of Rejection to be Reviewed on Appeal:**

A. Claims 82-84, 91-94 and 99 stand finally rejected under 35 USC 112, second paragraph, as being indefinite, the Examiner stating that claims may not incorporate, or incorporate by reference, another publication. The Examiner states that the phrase, "suitable for use as the scored and folded fibrous nonwoven mat used for vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile as disclosed in published U. S. Published Patent Application No. 20020020142 filed April 23, 2001, because of the ability of the fibrous nonwoven mat, after being scored, folded, and compressed, to spring back to the original shape and orientation" appearing in claim 91 and 99, makes the claims indefinite.

B. Claims 51-64, 71-84, 91, 94 and 99, all of the claims on appeal, are unpatentable under 35 USC 103(a) as being unpatentable over Jaffee (5,772,846) in view of Arkens et al (5,661,213).

a) The Examiner urges that Jaffee discloses a nonwoven glass fiber mat comprising a major portion of glass fibers and a minor portion of polymeric fibers with cross-linkable binder (abstract). The mat may be any basis weight but its preferred basis weight is from about 1.8 to about 2.2 pounds per 100 sq. ft. The Examiner takes the position that 2.3 pounds per 100 sq. ft. is provided for by a teaching of about 2.2 pounds per 100 sq. ft. because it is only 0.1 pounds per 100 sq. ft. less than the claimed value and the claimed value is only measured to the nearest 0.1 pound per 100 sq. ft. Jaffee's mats are not limited to a facer but may be made into other forms such as an accordin-shaped filter (col. 2, lines 20-28). Although Jaffee only teaches a mat thickness of 31 mils, mat thickness and basis wt. is a matter of choice depending desired properties and intended use. Thus, the Examiner urges, it would have been obvious to have made mats having a thickness of 38-48 mils. Jaffee's nonwoven mat comprises glass fibers with diameters between about 9 and 20 microns and lengths of around one inch (col. 3, lines 34-61). The nonwoven mat further comprises polyester fibers of 1.5 denier with lengths as low as 0.25 inch (please see col. 3, lines 54-61) and acrylic or modified urea formaldehyde binder (Example 1). The binder may be present in the nonwoven mat at up to 35 wt. percent of said mat. Finally, Jaffee teaches pleating, by thermoforming, the mat (Example 4) and as such is suitable for use as a scored and folded web as now claimed.

b) Jaffee's nonwoven mat comprises glass fibers with diameters of 9-20 microns, preferably 16 microns, and lengths of around 1 inch (col. 3, lines 8-10, 34-61). The mats also comprise polyester fibers of 1.5 denier with lengths as short as 0.25 inch (Example 2) and acrylic binder, the latter present in amounts up to 35 wt. percent with Example 2 containing 20 wt. percent and this meets the binder level of claim 51. Example 4 of Jaffee teaches 25 wt. percent.

c) Example 2 of Jaffee contains a blend of 85 wt. percent glass fiber and 15 wt. percent polyester fiber, the relative amounts of glass fiber and polyester fiber being a result-effective variable affecting its strength and degree of skin irritation (col. 6, lines 6-39) and thus absent a clear evidence showing criticality to unexpected results, the claimed ratio is within ordinary skill of the artisan by routine experimentation.

d) The mat of Example 2 in Jaffee has a Taber stiffness of 45, short of the "at least 50 of the claimed mats. While Jaffee teaches that this 45 stiffness is higher than desired for a facer, one of ordinary skill would have found it obvious to have modified the the mats of Example 2 to have a Taber stiffness of 50 based on the desired properties of the final product and its intended use.

e) While Jaffee fails to teach using a binder that before drying and curing comprises a homopolymer or a copolymer of polyacrylic acid and a polyol.

The Examiner urges that Arkens et al relates to a formaldehyde-free curable aqueous binder containing a polyacid, a polyol and a phosphorus-containing accelerator that may be used as a binder for heat resistant nonwovens composed of fiberglass or other heat resistant fibers including arimid fibers, polyimide fibers, rayon fibers and certain polyester fibers unaffected by exposure to temperatures above 125 C. (257 deg. F.). This reference also teaches that the polyacid may be a compound having a molecular weight less than about 1000 bearing at least two carboxylic acid groups and that it may be a polymeric acid, preferably an addition polymer formed from at least one ethylenically unsaturated monomer (such as methacrylic acid, acrylic acid, etc.) (Refer to col. 3, lines 45 through col. 4, lines 1-5). This reference further teaches that the polyol may be triethanolamine (col. 6, lines 1-6) and that the aqueous binder composition may also contain emulsifiers, pigments, fillers, wetting agents (equated to hydrophilic material) etc. (col. 6, lines 1-6). This reference teaches a nonwoven substrate made from glass fibers 1.25 inches long with a binder add-on of 28%. Since both Jaffee and Arkens et al are directed to glass fiber nonwoven mats comprising heat resistant fibers, the purpose disclosed by Arkens et al would have been recognized in the pertinent art of Jaffee and it

would have been obvious to one of ordinary skill in this art to have modified the mats of Jaffee by using the binder of Arkens et al instead of the binder used by Jaffee with the motivation being that the Arkens et al binder can also be “B” staged, apparently so that the mat can later be thermoformed.

f) The Examiner acknowledges that the teachings of Jaffee modified by those of Arkens et al do not explicitly teach all of the properties of the claimed mats, such as the ratio of wet tensile to dry tensile, as stated in claims 71-81 and 92, passing the NFPA Method #701 Flammability Test, as stated in all the claims, and an air permeability of about 500-700 CFM/sq. ft., but the Examiner urges that it is presumed that these properties would be inherent in the mats made obvious to one of ordinary skill by the teachings of Jaffee and Arkens et al.

g) In response to applicants' filing of a first Declaration by Jaffee (8/23/2006), the same Jaffee as the inventor of the Jaffee patent used in the rejection, stating that it took more than 100 trials taking more than 54 days for him to obtain a mat of the claimed invention, is solid evidence that the claimed invention was not obvious to one of ordinary skill in the art, the Examiner answered as follows.

“One hundred trials within 54 days to create an invention is not deemed excessive by the Examiner and does not contribute to a prima facie case of non-obviousness”, and that applicants have failed to demonstrate why 100 trials taking 54 days is not within the reasonable limits of trial and error that any investigator would go through to arrive at a desirable end product. Apparently, the Examiner has not commented on a second Declaration by Jaffee filed on November 19, 2007, stating that the mat disclosed in Example 2 of the Jaffee patent '846 was Johns Manville's Duraglass® 8802 mat, a mat mentioned in the U.S. Pub. App. No. 22020020142 mentioned in some of the claims, was unsuitable for a desired mat for use as scored and folded dividers in a commercial compressible ceiling tile because of undesirable properties, and that the mat disclosed in Example 3 of the Jaffee was also had properties and characteristics that were unsuitable.

h) In response to applicants' argument that the Jaffee patent '846 does not teach or reasonably suggest that any of the mats disclosed would be suitable for scoring and folding, the Examiner responds that those mats would necessarily be capable of being scored and folded and further that the feature of scoring and folding is **not** recited in the rejected claims.



i) In response to applicants' argument that the teachings of the Jaffee patent '846 actually leads one of ordinary skill away from the thickness and stiffness of the claimed invention, the Examiner responds by stating that Jaffee teaches that the mat may be of any basis weight and that the reason why one of ordinary skill in the art would have modified the Jaffee mat to make the claimed mat without destroying Jaffee's disclosed invention has been clearly articulated by the Examiner.

j) In response to applicants' argument that since the mats of Jaffee's invention in the Jaffee patent '846 did not contain a formaldehyde containing binder, there would have been no reason for one of ordinary skill in the art to have modified the teachings of Jaffee by using the binder of Arkens et al in place of the binder(s) taught by Jaffee, the Examiner responded as follows. Because Arkens et al teaches a binder that can be "B" staged (col. 8, lines 42-60), this is sufficient motivation to use the Arkens et al binder instead, and the fact that applicants recognized another advantage of doing so, which would flow from following the suggestion of the prior art, cannot be the basis for patentability when the differences would otherwise be obvious.

## VII. ARGUMENTS:

### Introduction:

The claimed invention, fibrous nonwoven mats having particular compositions and properties, was developed to meet a new need in a relatively new product, folding dividers in compressible ceiling tile manufactured by a customer and described in U.S. Pub. Pat. Application 20020020142 filed in 2001 and published in 2002. A large amount of work was required to develop the claimed invention, more than 100 trials taking more than 54 days of experimentation as established by the Jaffee Rule 132 Declaration filed on August 23, 2006, paragraph No. 4a. The claimed invention is based on the discovery of a combination of mat properties, compositions and mat parameters for a mat that provides superior performance, after being scored and folded, to meet a new need as dividers 52, etc. in a unique compressible ceiling tile that is described in Published Pat. Application No. 2002/0020142 and also illustrated in Exhibit 1, the mat having properties, after scoring and folding, unexpected because of the lack of prior art teachings of a mat's ability to springback and having excellent tensile strength along with other properties, meeting all of the needs of this new application that prior art mats only partially met, i.e. marginally worked mechanically, but did not meet desired finished product

specifications.

**A. The Examiner erred in rejecting claims 82-84, 91-94 and 99 35 USC 112, second paragraph, as being indefinite.**

1) The Examiner states that it is improper to refer to a public record or something in a public record in a patent claim, and doing so makes the claim indefinite, but the Examiner, after being asked to provide basis for this conclusion, has provided nothing in the statute, Rules, MPEP or prior USPTO or Court decisions to support this position. The requirements of 35 USC 112, second paragraph requires that the claims “particularly point out and distinctly claim”, and applicant believes the rejected claims meet this requirement for the reasons following below.

2) Claim 91 differs from claim 51, with respect to 35 USC 112, second paragraph, by further describing the recovery properties, “spring back”, after scoring and folding as “suitable for use as a scored and folded fibrous mat in a compressible ceiling tile as disclosed in U.S. Published Patent Application No. 2002002142 filed April 23, 2001, because of the ability of the fibrous nonwoven mat, after being scored, folded and compressed, to spring back to the original shape and orientation”. The Examiner did not reject claim 51 as being indefinite under 35 USC 112, second paragraph. Applicants believe that because of this stated difference, the invention is even more particularly pointed out and more distinctly claimed than the invention of claim 51.

3) Because no standard test existed for the type of “spring back” properties needed for this new type of fibrous mat for this relatively new application and products, adding in a concise manner by referring to a readily available public document describing the type of environment the “spring back” properties or characteristics of the mats, dividers are working with and against adds to the understanding one of ordinary skill in fibrous mats obtains from the disclosure and claims, and therefore does not make the claims less definite than claims 51-64, etc.

4) The Examiner urges that a claim, by itself, should be a self-contained body that one of ordinary skill in the art should be able to understand based on its own substance, without needing guidance from a completely separate document. Applicants believe this conclusion by the Examiner is wrong because it has long been accepted and practiced to use shorthand terms and identifiers to incorporate or explain limitations in the claims. For

example, it is common practice to identify properties of an article by an amount and a short hand reference to a separate document such as an ASTM and number or title of the test procedure, etc. In fact, all of the present claims contain such a shorthand reference to a separate document, the NFPA Method #701 Flammability Test - no objection or rejection of the claims, such as claims 51-64, was made on these claims under 35 USC 112.

Applicants believe that the Examiner erred in rejecting claims 82-84, 91-94 and 99 under 35 USC 112, second paragraph, and respectfully requests the Board of Appeals to reverse the Examiner.

**B. The Examiner erred in rejecting claims 51-64, 71-84, 91-94 and 99 under 35 USC 103 as being unpatentable over Jaffee '846 in view of Arkens et al because.**

**1) Jaffee '876 leads one of ordinary skill in the art away from the claimed invention.**

Jaffee teaches mats, and a method of making the mats, superior to prior art mats for facing gypsum wall board, the mats having improved flexibility compared to prior art mats (col. 2, lines 1-6 and col. 6, lines 20-23. Jaffee illustrates prior art mats he wants to improve on in Examples 1 and 2 in col. 5, neither of which are Jaffee's invention or have properties of his mats, see col. 5, lines 33-43 and 60-67. Thus Jaffee teaches away from the claimed invention, which have higher stiffness and a spring back characteristic. The Examiner refers sometimes to Example 2 of Jaffee, a prior art mat, but this mat also has lower stiffness (45) and there is no reasonable suggestion that it would be suitable for scoring and folding or how doing so would affect its tensile strength. Note that the mat of Example 3 of Jaffee has a stiffness of only 33, significantly lower than the 37 and 45 of his Examples 1 and 2 respectively, and substantially below the stiffness on applicants' claimed mats, at least about 50. There is also no reasonable suggestion of changing the binder to the binder used in Example 3, or any other binder. Also note Jaffee's second Declaration, filed November 19, 2007, paragraphs Nos. 4 and 5 in which Jaffee declares that the mats of Jaffee '846's Examples 2 and 3 were not suitable for use in compressible ceiling tile because of insufficient stiffness and insufficient fire resistance and toxicity.

Jaffee also teaches that part of his objective are mats containing a major portion of glass fibers that can be pleated and thermoformed to a desired shape and then cooled

to retain the formed shape (see col. 2, lines 10-15). Jaffee provides an example of doing so, Example 4, in which the mat, containing a latex binder TN 819 and TN 821 that could be “B” staged by drying to 250 degrees F. such that the binder remained in a thermoplastic stage. This mat was then heated and pleated (pleated by thermoforming and then cooled to retain the pleats) to make a pleated nonwoven for filter elements (col. 6, lines 51-64). This shape of pleated filter element is common, such as in the engine air filters of most automobiles. However, this teaching of Jaffee **also leads one of ordinary skill away from the claimed invention**. Thermoforming is very different from scoring and folding and the two techniques **produce completely different results**. As taught by Jaffee above, thermoforming and cooling to retain the shape produces pleats that remain in the mat, i.e. the mat does not spring back as it does in the claimed mats. Nothing in Arkens et al teaches anything different.

Applicants believe that the disclosure Jaffee '846 teaches **away from the claimed invention** and respectfully requests the Board of Appeals to reverse this rejection under 35 USC 103. \_

**2) Neither Jaffee nor Arkens et al provide any guidance to one of ordinary skill in the art to make a nonwoven mat having unexpected excellent tensile strength, flex and recovery after scoring and folding and ----- because of the fibrous nonwoven mat having the ability, after being scored, folded and compressed, to spring back to the original shape and orientation.**

There is no disclosure in Jaffee '846 or Arkens et al that would suggest to one of ordinary skill in the art that any of the mats disclosed in these references should or could be scored and folded to make a mat having the excellent tensile and spring back properties of the claimed mats. Furthermore, there is no disclosure in either of these references that would lead one of ordinary skill in the art to believe that modifying any of the mats disclosed in composition, basis weight and thickness to that of the claimed mats would produce mats having excellent tensile strength and spring back after scoring and folding.

Because of this lack of leading disclosure, and the actual disclosure leading away from the claimed invention, applicants believe that the disclosures of Jaffee and Arkens et al do **not produce a prima facie obvious situation necessary for a 35 USC 103 rejection** and respectfully request the Board of Appeals to reverse this rejection under 35 USC 103.

**3. The Examiner erred in concluding that the first Jaffee Declaration, that filed on August 23, 2006, did not provide evidence of non-obviousness because, in the opinion of the Examiner, more than 100 trials taking more than 54 days was not an unreasonable amount of trials and time for an investigator, like the inventor Jaffee, an expert in the art, to take to arrive at the claimed invention.**

The inventor of the rejected claimed invention, Jaffee, is the same Jaffee who was a co-inventor of the invention and disclosure in the Jaffee '846 patent. This certainly makes Jaffee an expert in the disclosure in the Jaffee '846 patent. Further, applicants believe that the credentials set out by Jaffee in his Declaration filed on August 23, 2006, paragraph 1 and his patents set out in Exhibit 1 qualify Jaffee as an expert in the field of nonwoven mats. While it may be reasonable to conclude that it might take one of ordinary skill in the art to make several trials of something that is held obvious from the prior art, **it is not only unreasonable, but probably incredulous to conclude that it would be reasonable to conclude that more than 100 trials taking more than 54 days is a reasonable effort for an expert in the field to take to arrive at what the Examiner concludes is obvious from the teachings of Jaffee '846 and Arkens et al.**

For this reason, applicants believe the Examiner erred in holding that the evidence set out in paragraph 4 (a) of the Jaffee Declaration filed on August 23, 2006 did

not provide evidence of non-obviousness and respectfully requests the Board of Appeals to reverse the rejection of these claims under 35 USC 103.\_ \_ \_

Respectfully submitted,

/rdt/

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Robert D. Touslee

Date: February 3, 2010

Registration No. 34,032  
Customer No. 29602

## VIII. Appendix - Claims

51. A fibrous nonwoven mat having a basis weight of 2.3 to about 2.6 lbs/100 sq. ft., a thickness in the range of about 38 to about 48 mils, high flame resistance and unexpected excellent tensile strength, flex and recovery properties after scoring and folding and being suitable for use as a scored and folded fibrous nonwoven mat for vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile because of the fibrous nonwoven mat having the ability, after being scored, folded, and compressed, to spring back to the original shape and orientation, the fibrous nonwoven mat comprising a blend of fibers comprising about 88 to about 92 weight percent chopped glass fibers having a diameter in the range of about 13 to about 17.5 microns and a length in the range of about 0.7 to about 1.1 inches and about 8 to about 12 percent man-made polymer fibers selected from the group consisting of polyester, polypropylene, nylon, PBT, polyacrylonitrile, and polybenzimidazole in the fibrous nonwoven mat, the blend of fibers in the being bound together by a binder that is at least partially cured and consists essentially of, before drying and curing, a homopolymer or a copolymer of polyacrylic acid and a polyol, with or without a polycarboxy polymer, the binder being present in the mat in an amount of about 25 +/- 5 wt. percent of the fibrous nonwoven mat, the fibrous nonwoven mat having a Taber Stiffness of at least about 50 gram centimeters and passing the National Fire Protection Association's (NFPA) Method #701 Flammability Test.

52. The mat according to claim 51, wherein the average molecular weight of the polyacrylic acid polymer is about 3,000 or less.

53. The mat according to claim 51, wherein the polyol is triethanolamine.

54. The mat according to claim 52, wherein the polyol is triethanolamine.

55. The mat of claim 51 wherein the man-made polymer fibers are polyester fibers.

56. The mat of claim 52 wherein the man-made polymer fibers are polyester fibers.

57. The mat of claim 53 wherein the man-made polymer fibers are polyester fibers.

58. The mat of claim 54 wherein the man-made polymer fibers are polyester fibers.

59. The mat of claim 51 wherein the binder content is in the range of about 25 to about 28 wt. percent.

60. The mat of claim 59 wherein the polymer fibers are polyester fibers and the glass fibers have an average fiber diameter in the range 16 +/- 1 micron.

61. The mat of claim 51 wherein the polymer fibers are polyester fibers about 1.5 denier and are about 0.25 +/- .07 inch long.

62. The mat of claim 52 wherein the polymer fibers are polyester fibers about 1.5 denier and are about 0.25 +/- .07 inch long.

63. (Previously presented) The mat of claim 54 wherein the wherein the polymer fibers are polyester fibers about 1.5 denier and are about 0.25 +/- .07 inch long.

64. The mat of claim 63 wherein the glass fibers have an average fiber diameter in the range 16 +/- 1 micron and the binder content is in the range of about 25 to about 28 wt. percent.

71. The mat of claim 51 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

72. The mat of claim 52 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

73. The mat of claim 53 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

74. The mat of claim 54 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

75. The mat of claim 55 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

76. The mat of claim 56 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.



77. The mat of claim 57 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

78. The mat of claim 58 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

79. The mat of claim 59 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

80. The mat of claim 60 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

81. The mat of claim 61 wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

82. The mat of claim 99 wherein the fiber content of the mat is about 90 wt. percent of glass fibers and about 10 wt. percent of polyester fibers, the binder content of the mat is about 25 wt. percent, the basis wt. of the mat is about 2.4 lbs./100 sq. ft. and the thickness of the mat is about 42 +/- 3.

83. The mat of claim 99 wherein the fiber content of the mat is about 88 wt. percent of glass fibers and about 12 wt. percent of polyester fibers, the binder content of the mat is about 25 wt. percent, the basis wt. of the mat is about 2.6 lbs./100 sq. ft. and the thickness of the mat is about 42 +/- 5 mils.

84. The mat of claim 99 wherein the fiber content of the mat is about 92 wt. percent of glass fibers and about 8 wt. percent of polyester fibers, the binder content of the mat is about 28 wt. percent, the basis wt. of the mat is about 2.3 lbs./100 sq. ft. and the thickness of the mat is about 40 +/- 5 mils.

91. A fibrous nonwoven mat having a basis weight in the range of 2.3 to about 2.6 lbs./100 sq. ft., a thickness in the range of about 38 to about 48 mils, a high flame resistance and unexpected tensile strength, flex and recovery properties after scoring and

folding and suitable for use as a scored and folded fibrous nonwoven mat as vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile as disclosed in published U. S. Published Patent Application No. 20020020142 filed April 23,2001, because of the ability of the fibrous nonwoven mat, after being scored, folded, and compressed, to spring back to the original shape and orientation, the fibrous nonwoven mat comprised of a blend of fibers comprised of about 84 to about 92 wt. percent of chopped glass fibers having an average fiber diameter in the range of about 13 to about 17.5 microns and lengths within the range of about 0.7 and about 1.1 inches and about 8 to about 16 wt. percent of polyester fibers having a length of about 0.25 +/- 0.07 inch, the blend of fibers being bound together with about 20 to about 30 wt. percent, based on the dry weight of the fibrous nonwoven mat, of a cured resin consisting essentially of a resin derived from an aqueous homopolymer or copolymer of polyacrylic acid and a polyol, with or without a polycarboxy polymer, the fibrous nonwoven mat having a Taber Stiffness of at least about 50 gram centimeters and passing the National Fire Protection Association's (NFPA) Method #701 Flammability Test.

92. The mat of claim 91 wherein the average molecular weight of the polyacrylic acid polymer is about 3000 or less wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent.

93. The mat of claim 91 wherein the polyol is triethanolamine, the glass fibers have a diameter of about 16 +/- 1.5 microns and the mat has an air permeability in the range of about 500 – 700 CFM/sq. ft.

94. The mat of claim 92 wherein the polyol is triethanolamine, the glass fibers have a diameter of about 16 +/- 1.5 microns and the mat has an air permeability in the range of about 500 – 700 CFM/sq. ft.

99. A fibrous nonwoven mat having high flame resistance and unexpected tensile strength, flex and recovery properties after scoring and folding and suitable for use as the scored and folded fibrous nonwoven mat used for vertical webs spanning between an exposed mat and a backer mat in a compressible ceiling tile as disclosed in published U. S. Published Patent Application No. 20020020142 filed April 23,2001, because of the ability of the fibrous nonwoven mat, after being scored, folded, and compressed, to spring back to the original shape and orientation, the fibrous nonwoven mat comprised of a blend of fibers comprised of about 88 to about 92 wt. percent of chopped glass fibers

having an average fiber diameter in the range of about 16 +/- 1 microns and a length of about 1 inch and about 8 to about 12 wt. percent of 1.5 denier polyester fibers having a length of about 0.25 +/-0.07 inch, the blend of fibers being bound together with about 25 to about 28 wt. percent, based on the dry weight of the fibrous nonwoven mat, of a cured resin derived from an aqueous homopolymer or copolymer consisting essentially of polyacrylic acid and a polyol, with or without a polycarboxy polymer the average molecular weight of the polyacrylic acid polymer is about 3,000 or less, wherein the binder is cured sufficiently that the wet tensile strength divided by the dry tensile strength times 100 equals at least about 35 percent, the mat passing the National Fire Protection Association's (NFPA) Method #701 Flammability Test, the mat having a Taber Stiffness of at least about 50 gram centimeters and the mat having an air permeability in the range of about 500 – 700 CFM/sq. ft., the nonwoven mat having a basis weight in the range of 2.3 to about 2.6 lbs/100 sq. ft and a thickness in the range of about 35 to about 48 mils.

## **IX. EVIDENCE APPENDIX**

The below items, copy of each attached, are additional evidence to teachings in the cited patents relied upon by applicant.

1. U.S. Published Patent Application No. 20020020142
2. Jaffee Declaration Under 37 CFR 1.132, filed August 23, 2006.
3. Jaffee Declaration Under 37 UFR 1.132, filed November 19, 2007.
4. Exhibit 1, filed June 20, 2007.

**X. RELATED PROCEEDINGS APPENDIX**

**NONE**